

This listing of claims will replace all prior versions, and listings, of claims in the present application.

LISTING OF CLAIMS

Claim 1 (Currently amended) A bipolar transistor comprising:

- a semiconductor substrate layer;
- a conductive back electrode located over the semiconductor substrate layer for receiving a bias voltage;
- an insulating layer located directly over said conductive back electrode;
- a first semiconductor layer located over said insulating layer, said first semiconductor layer comprising a base which includes a first conductive type dopant and an extrinsic collector which includes a second conductivity type dopant, said extrinsic collector borders said base; and
- an emitter comprising a second semiconductor layer of the second conductivity type dopant located over a portion of said base, wherein said conductive back electrode is biased to form an inversion charge layer ~~in~~ at a bottom portion of said base region at an interface between said first semiconductor layer and said insulating layer which serves as an intrinsic collector of said transistor.

Claim 2 (Previously Presented) The bipolar transistor of Claim 1 wherein a portion of said base is doped to form an extrinsic base.

Claim 3 (Original) The bipolar transistor of Claim 2 wherein the extrinsic base, the emitter, the extrinsic collector and the exposed surfaces of the conductive back electrode each include a silicide.

Claim 4 (Original) The bipolar transistor of Claim 3 wherein the silicide is in contact with a metal contact that is located atop the silicide inside a contact opening formed in an interconnect dielectric.

Claim 5 (Original) The bipolar transistor of Claim 1 wherein the emitter comprises a single-finger.

Claim 6 (Original) The bipolar transistor of Claim 1 wherein the emitter comprises multi-fingers.

Claim 7 (Original) The bipolar transistor of Claim 2 wherein the extrinsic collector and the extrinsic base are raised regions.

Claim 8 (Original) The bipolar transistor of Claim 1 wherein a spacer is located on sidewalls of the emitter.

Claim 9 (Original) The bipolar transistor of Claim 1 wherein said insulating layer is a thin insulating layer having a thickness from about 1 to about 15 nm.

Claim 10 (Original) The bipolar transistor of Claim 9 wherein another insulating layer that is thicker than the thin insulating layer is located adjacent thereto, said another insulating layer is a buried oxide of a silicon-on-insulator.

Claim 11 (Original) The bipolar transistor of Claim 2 wherein the base contains a p-type dopant, the emitter contains an n-type dopant, the extrinsic collector contains an n-type dopant and the extrinsic base contains a p-type dopant.

Claim 12 (Original) The bipolar transistor of Claim 2 wherein the extrinsic base diffuses minimally into the base so as not to be in contact with the underlying insulating layer.

Claim 13 (Currently Amended) An integrated semiconductor structure comprising a bipolar transistor comprising a conductive back electrode for receiving a bias voltage; an insulating layer located over said conductive back electrode; a first semiconductor layer located over said insulating layer, said first semiconductor layer comprising a base which includes a first conductive type dopant and an extrinsic collector which includes a second conductivity type dopant, said extrinsic collector borders said base; and an emitter comprising a second semiconductor layer of the second conductivity type dopant located over a portion of said base region, wherein said conductive back electrode is biased to form an inversion charge layer in at a bottom portion of said base region at an interface between said first semiconductor layer and said insulating layer which serves as an intrinsic collector of said transistor; and

at least one adjacent complementary metal oxide semiconductor device, said bipolar transistor and said at least one adjacent complementary metal oxide semiconductor device are separated by an isolation region.

Claim 14 (Original) The integrated semiconductor structure of Claim 13 wherein the complementary metal oxide semiconductor device is a field effect transistor.

Claims 15-31 (Cancelled)